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JUN 27 1968

REGISTRATION

June 25, 1968
Registered Mail

Mr. Wayne C. Bellaman
Regional Engineer
Commonwealth of Pennsylvania
Region Office III
996 South Main Street
Meadville, Pennsylvania 16335

Dear Mr. Bellaman:

This letter is in reply to Mr. Allender's letter of June 20, 1968 to Dr. Brown requesting certain revisions and/or corrections in our application for a permit for No. 3 deep disposal well, dated May 24, 1968. Some of the questions were covered in my letter of June 6, 1968 on No. 1 disposal well but the material is repeated here for completeness. The items discussed are in the order listed by Mr. Allender.

I (a) The amount of spent liquor available for disposal has averaged 574,000 gallons per day over the last three accounting periods. It is expected to continue at approximately the same level. When No. 3 well operation begins the spent liquor will be injected into No. 1 and No. 3 well while No. 2 well is reconditioned. When all three wells are in operation the liquor will be distributed among the wells. With both No. 2 and No. 3 well being capable of receiving all of the spent liquor, operation of individual wells will be developed by actual experience.

(b) The well logs showed all the strata below the Bass Island formation to be impervious and not capable of being injected with liquor. The well casing goes down to 2,181 feet and when it was set in acid resistant concrete a five foot plug was formed in the well at the end of the casing. The plug was not drilled out and blocks further flow down the well. The well is open through the balance of the Lockport Formation and into the Clinton Formation. The well logs showed that the Lockport would accept little or no spent liquor and the Clinton is impervious to liquor. Both the Lockport and Clinton would be acceptable as injection horizons if they would accept liquor since they are bounded by impervious layers above and below. It is desirable to have a hole below the formation so that any debris that may arise can fall to the bottom and not effect the injection horizon.

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SECTION III

(c) An earthen dike will be built around No. 3 well to retain spent liquor should there be a leak or backflow from the well. A portable pump has been made available for pumping any accumulation of spent liquor inside the dike to collecting tanks pending ultimate disposal. It would be added to the effluent going to further treatment when such facilities are available.

(d) Arrangements are being made to divert the 100-150 gallons of spent liquor vented on startup of No. 2 well to the general mill outfall in Motsch Run where it would join the other effluent streams. In the future, this waste will be included in the mill effluent that is given subsequent treatment.

(e) (a) We are currently keeping records on the amount of spent liquor injected into wells 1 and 2. The records will be extended to cover No. 3 well when it starts up.

(b) The injection tubing has been cemented into the hole so it is impossible to install a landing nipple at the 60 foot depth. A stainless steel landing nipple has been installed at 1,580 feet to provide a permanent seat to which a retrievable wire line plug can be dropped from a wire line truck. Lowering time to the 1,580 foot depth will be less than 5 minutes. Since the casing failure in the No. 1 well was at 900 feet, our consultants from Dow Chemical Company tell us the plug should be set as close as possible to the top of the Bass Island formation.

(c) Recorded data on the travel of the spent liquor into the Bass Island formation is limited. When well No. 2 was drilled, no trace of spent liquor from well No. 1 was found. When well No. 3 was drilled, approximately 625 feet from well No. 2, a small amount of spent liquor was found at 1,690 feet near the bottom of the Bass Island formation (See Exhibit E of the report accompanying the permit application.) Material provided with the original No. 1 well application dated June 10, 1963 (Exhibit A and B attached) provides the best answer as to the probable rate of travel into the Bass Island formation.

(d) The statement in the Completion Report that the Bass Island formation is better developed than in wells 1 and 2 is a reference to the greater porosity of the Bass Island formation at No. 3 well as shown by well logs. (See the Density log and Nuclear log Exhibit G in the application.) This greater porosity is borne out by the lower injection pressures found in the injection test after acidizing No. 3 well.

(e) 2,100 barrels of water were pumped into No. 3 well in a 1 hour and 34 minute injection test after acidizing on May 23, 1968. The injection test showed that the pressures required were less than in wells 1 and 2. Injection pressure on No. 2 well was checked during the injection test. There was no change in the injection pressure on No. 2 well.

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(f) The fiberglass injection pipe is coated with sand to provide a good bond with the cement which completely fills the space between the fiberglass injection pipe and the well casing. The fiberglass injection pipe has a tensile strength of 80,000 lbs. and the threads a tensile of 54,000 lbs. plus. The bursting strength at 80° F. is 9,000 lbs. (Exhibit D of the report accompanying the permit application) The cement filling the space between the injection pipe and the casing will support the pipe and would provide a higher bursting strength for the pipe cement combination. Also, the cement supports the fiberglass tubing in a vertical direction. In addition, the injection pipe is supported by a 6 inch Nominal 316 stainless steel hanger with Teflon packing at the surface of the well.

(g) The same pipe has been used for years in the pulp mill in spent liquor service and no deterioration has been observed. But, should the pipe fail it could be drilled out with a drill rig and new pipe installed.

(h) We do not expect failure of the fiberglass injection pipe. The well will be monitored and any sudden change in pressure especially a drop in pressure, will be a warning that should be checked.

(i) It is not known at this time just what the operating sequence of wells No. 2 and No. 3 will be. Use of the wells could be alternated or both could be used at the same time. An operating pattern for the two wells and well No. 1 will have to be worked out by experience. There was no change in injection pressure in No. 2 well during the injection test on No. 3 well so no pressure buildup may be encountered. If the injection pressure on No. 3 well continues to be lower than No. 1 and No. 2 wells, it will probably be used more frequently.

No evidence of pressure buildup in the formation has been seen during the four years of operation of the deep well system. We do not anticipate any problem in this respect with No. 3 well.

If there are any further questions or comments, please contact Dr. Brown or me. We appreciate the effort you are making to expedite the permit application.

Very truly yours,

HAMMERMILL PAPER COMPANY

Charles C. Hassell
Charles C. Hassell
Pennsylvania Registered
Professional Engineer

Attachments

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